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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/804,012	03/12/2001	William R. Bennett	SP-1080.2 US	8880

7590

08/04/2003

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EXAMINER

MERCADO, JULIAN A

ART UNIT

PAPER NUMBER

1745

DATE MAILED: 08/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/804,012

Applicant(s)

BENNETT ET AL.

Examiner

Julian Mercado

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 and 29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1-4, 12-27 and 29 is/are allowed.
- 6) ☐ Claim(s) 5-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Remarks

This Office Action is responsive to applicant's amendment filed May 27, 2003.

The objection to claims 7, 16 and 18 have been withdrawn.

The rejection of claim 12 under 35 U.S.C. 112, second paragraph has been withdrawn.

This Office Action presents a new ground of rejection and is therefore made NON-FINAL.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 7 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a step along said side wall, does not reasonably provide enablement for "at least one step along said side wall" in line 7 of the claim.

The rejection is maintained for the reasons of record and for the additional reasons herein discussed in response to applicant's salient arguments. Applicant submits, by argument, that "additional steps can be formed in vertical portion of the can side wall in the same manner as the step shown in Fig. 1; i.e., by forming two *additional radii*, similar to radii 6 and 7, for each additional step." (response, pp. 13-14, emphasis added) The examiner maintains, however, that

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the original disclosure does not reasonably provide enablement for the additional radii. The Figures are also limited to only one set of radii and one step formed therebetween.

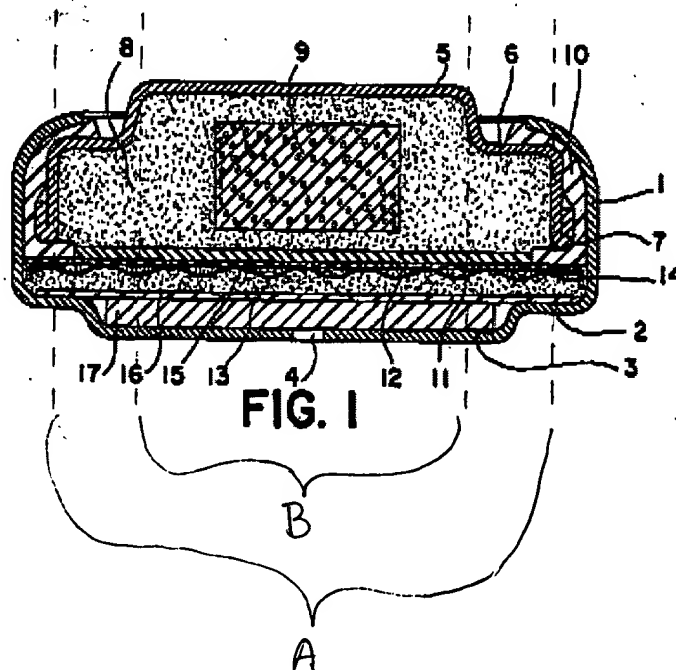
In order to obviate this ground of rejection, it is suggested to change "at least one step along said side walls, each such step" in line 7 of claim 7 to --a step along said side walls, said step--.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by Sauer et al. (U.S. Pat. 4,054,726).

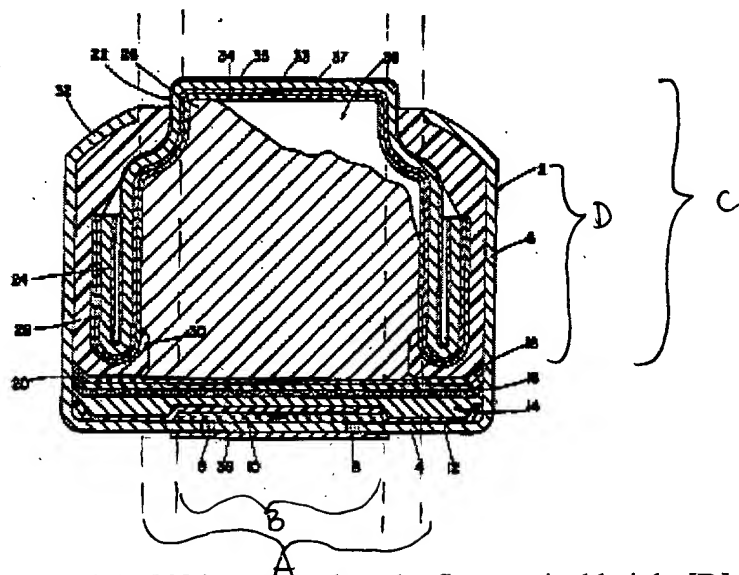
Regarding independent claim 5, Sauer et al. teaches an anode cup having a closed upper end [5], an open lower end [8], a step and a substantially vertical section between the step and the closed end. (Figure 1) Figure 1 is relied upon to teach, by illustration, that the internal diameter [A] of the open end is larger than the maximum external diameter [B] above said step.



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Claims 5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Mansfield, Jr. et al. (U.S. Pat. 5,279,905).

Regarding independent claims 5 and 7, Mansfield, Jr. et al. teaches an anode cup having a closed upper end [37], an open lower end [36], a step and a substantially vertical section between the step and the closed end. (Figure) The Figure is relied upon to teach, by illustration, that the internal diameter [A] of the open end is larger than the maximum external diameter [B] above said step, as illustrated below:



As shown, the second vertical height [C] is greater than the first vertical height [D] and thus the resulting difference would be greater than zero. (independent claim 7)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Sauer et al. as applied to claim 5 above, in view of Bennett (U.S. Pat. 5,846,672).

Claims 6, 8, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mansfield, Jr. et al. as applied to claims 5 and 7 above, in view of Bennett.

The teachings of both Sauer et al. or Mansfield, Jr. et al. are discussed above. The rejection based on Sauer et al. or Mansfield et al. in view of Bennett will be discussed in parallel.

Sauer et al. or Mansfield, Jr. et al. do not explicitly teach a ratio of total cup height to a vertical midpoint of the step being greater than three (claims 6 and 11) or at least two times the second vertical height (claim 8), nor do the patentees teach the first vertical height to be at least two times the second vertical height. (claim 9) However, Bennett teaches a step in an anode cup to be positioned at 5% to 40% of the wall height, thus, the resulting ratios of the first and second vertical heights of the anode cup wall fall within the range of 19 to 1.5. The resulting ratio of the total height of the cup to a vertical midpoint of the step would be greater than three or twice the second vertical height to the extent that the range of 19 to 1.5 overlaps and comfortably exceeds the greater portion of this range. Thus, at the time the invention was made, the skilled artisan would have found obvious to modify either Sauer et al.'s or Mansfield, Jr. et al.'s inventions by employing a cup height to a vertical midpoint of a ratio greater than three, or at least two times that of the second vertical height, or a first vertical height of at least twice that of a second

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vertical height. The motivation for such a modification would be to maximize the cell's internal volume. (Bennett, col. 3 line 6 et seq.)

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mansfield, Jr. et al. and Bennett as applied to claims 5-9 and 11 above, and further in view of Oltman et al. (U.S. Pat. 5,567,538).

The teachings of Mansfield, Jr. et al. and Bennett are discussed above.

Mansfield, Jr. et al. does not explicitly teach the total height of the cup to be at least 0.178 inch. However, Oltman teaches that metal-air cells typically have heights ranging from 2.1 mm to 15 mm. (col. 1 line 34) These heights correspond to 0.0827 to 0.590 inches. The skilled artisan would find obvious to employ a cup of a height at least 0.178 inches in Mansfield, Jr. et al.'s invention in accordance with the desire to maximize the amount of active material in the cell (as the cup contains the negative anodic material) as well as employ a cup size which is compatible with the electrically-powered devices the metal-air cell is designed for.

Response to Arguments

Applicant's arguments against Bennett have been fully considered but are deemed moot in view of the new ground(s) of rejection.

Arguments against Oltman et al. appear to be directed to this reference failing to remedy alleged differences between Bennett and the present claims. However, in view of the new

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ground of rejection(s) above, the rejection when further in view of Oltman et al. is subsequently maintained for the reasons set forth above and in the previous Office Action.

Allowable Subject Matter

Claims 1-4, 12-27 and 29 are allowed.

The following is an examiner's statement of reasons for allowance: the prior art of record and to the examiner's knowledge do not teach or render obvious at least to the skilled artisan the instant invention regarding an anode cup for an electrochemical cell wherein the internal cup diameter is greater than the maximum upper external cup diameter, wherein a ratio of the maximum upper external diameter to the lower external diameter is greater than or equal to about 0.86, and wherein a ratio of cup height from the terminal edge to an uppermost part of the step to a cup height from the terminal edge to a lowermost part of the step, or a ratio of the height to the top of the second step radius of the cup to the height to the bottom of the first step radius of the cup, is not greater than 2.19.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (703) 305-0511. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (703) 308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


jam
July 30, 2003


Patrick Ryan
Supervisory Patent Examiner
Technology Center 1700